The Jefferson Fellowship Program

Paul Davis

Jefferson Science Fellows are senior tenured faculty in science and engineering who spend a year working to bring "science to statecraft" in the U.S. Department of State. The program is sponsored by the National Academies of Science and Engineering with support from the Carnegie and MacArthur Foundations. I am the first mathematician among the sixteen fellows appointed during the program's three-year life. (Perhaps I am the first to have applied?!) The opportunity is unusual, exciting, and worth considering by other mathematicians.

The straightforward technical challenges are nonexistent. Indeed, my five Jefferson colleagues and I have struggled with technical withdrawal syndrome: we knew from the start we would do very little serious science but struggled with confronting that reality as we went through the placement process this August. But we got over it and have settled down to work that ranges from proximate to far distant from our academic identities. (The other Jefferson Fellows for 2006–07 are Osama Awaldelkarim, a physicist/engineer specializing in nanotechnology; Kim Boyer, an electrical engineer who does computer vision and medical image analysis; Michael Mauel, a plasma physicist; Katherine Seley-Radtke, a biochemist; and Claudio Cioffi-Revilla, a computational social scientist.)

I am working in the Bureau of East Asian and Pacific Affairs for the Office of Regional Security and Policy Affairs, which is responsible for a wide range of activities arising from the U.S. commitment to an enhanced partnership with the Association of Southeast Asian Nations (ASEAN). I am also assisting with some UN agencies whose missions involve development.

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As I write this in mid-September, I see no likely connections with my experience in measurement, operation, and control of electric power networks. (I can't even turn on the lights in my office—they're controlled by a motion detector!) But I do anticipate opportunities to foster collaborations around science and technology and to connect scientists and others in ASEAN's member nations with colleagues in the U.S. If I get lucky, I might even help to nurture some development programs that support good science that serves a local population.

I suspect that most Jefferson Fellows have come to accept this technical distance as both an opportunity and a price to pay for the chance to learn about a complex and important part of our government. Our most valuable contributions may be what we know instinctively about the cultures of science and the academy, not our specialities. Certainly, we can't help but learn from the very smart, broadly experienced, generalists with whom we are working. We will not become diplomats in a

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single year, but we can contribute a scientist's perspective to the formation and execution of foreign policy.

Past fellows have made many specific contributions: alerting an international team to the danger of an instability-driven release of CO_2 from a lake if it were pumped too low; remote imaging to predict humanitarian disasters; international collaborations on a multitude of scientific fronts; science-based decisions about import-export controls; and much more. But a large share of the value of their work seems to have come as well from the habits of mind common to science: asking for data, questioning, examining sensitivities, and so on. Those fellows have also provided a significant measure of sound thinking around matters as diverse as avian influenza and nanotechnology.

Such concrete accomplishments notwithstanding, I was drawn to this fellowship by the vague notion of using science and technology to aid international development. I was completing a seven-year term as the administrator responsible for WPI's large international program. Its key element is assigning interdisciplinary student teams to solve social-technical problems on site under faculty guidance; more than 50% of WPI's undergraduates benefit from one of these two-month international assignments.

Intellectually and educationally, this work looks a lot like dirty-fingernails applied mathematics without the equations: listen carefully to discover an underlying problem, solve it as simply and completely as possible in the time available, and deliver the solution so it serves those who need it. The Jefferson Fellowship offered a chance to pose for myself the same challenge my colleagues and I had been putting to students: use what you know, at multiple levels, to do something worthwhile for others.

My Jefferson colleagues seem to have similar motivations. Collaboration and team work are common in our backgrounds. Indeed, two of the six of us are even recovering academic administrators. (Coincidentally, Daniel Ullman, this year's AMS Congressional Fellow, has just completed a term as department chair as well.) Extrapolating from such sparse data, it seems that no particular part of science, mathematics, or engineering has a natural lock on the Jefferson Fellowships. But there is a rewarding place for individuals with broad interests, a willingness to step back from the challenges of their speciality, and a desire to wrestle productively with poorly defined problems. I hope more mathematicians will participate.

Applications are due December 31, 2006. Full information appears at `http://www7.nationalacademies.org/jefferson/`.